THE ENVISION™ RATING SYSTEM

Mississippi River Forum

March 21, 2014

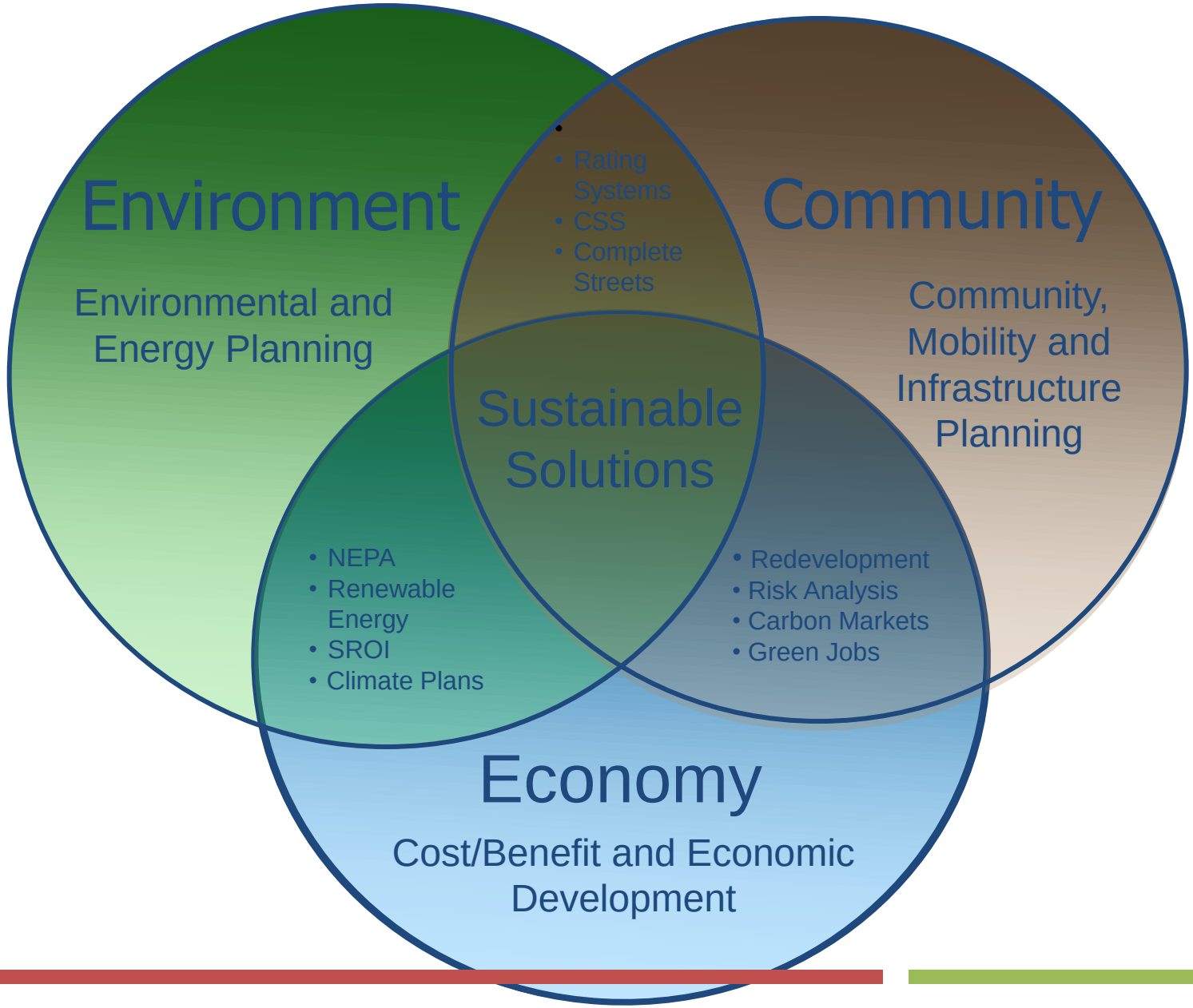
St. Cloud, Minnesota

WHAT DO WE MEAN BY "SUSTAINABLE"?

"…to meet the needs of the present without compromising the ability of future generations to meet their own needs."

- World Commission on Environment and Development, 1987

The Sustainability Challenge



THE ENVISION™ RATING SYSTEM

INSTITUTE FOR SUSTAINABLE INFRASTRUCTURE
I S I

ZOFNASS PROGRAM
FOR SUSTAINABLE INFRASTRUCTURE
Graduate School of Design
Harvard University

APWA
Your Comprehensive Public Works Resource

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

ACEC
American Council of Engineering Companies
100 Years of Excellence

HDR

ISI ORGANIZATION

HDR

WHAT MAKES ENVISION™ UNIQUE?

- It applies to civil infrastructure
- It includes design, planning, construction and maintenance elements
- It is applicable at any point in an infrastructure project's life cycle
- It speaks to the triple bottom line: social, economic and environmental goals
- It is designed to keep pace with a changing concept of sustainability

WHAT IS ENVISION™?

Envision™ is a tool, which itself is part of a larger system, developed to help evaluate the sustainability of civil infrastructure.

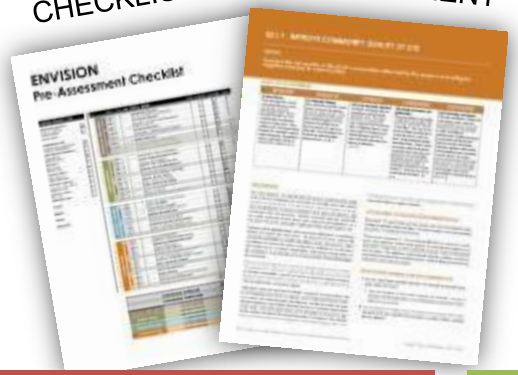
This system includes:

- A self assessment checklist
- The Envision™ Rating Tool
- A credential program for individuals
- A Project Evaluation and Verification Program
- A Recognition Program for Sustainable Infrastructure

PHASE TOOLKITS

PRE-ASSESSMENT CHECKLIST

RECOGNITION ASSESSMENT



COMPANION TOOLS

What Types of Infrastructure will Envision Rate?

ENERGY

- Geothermal
- Hydroelectric
- Nuclear
- Coal
- Natural Gas
- Oil/Refinery
- Wind
- Solar
- Biomass

WATER

- Potable Water
- Wastewater
- Capture/Storage
- Water Reuse
- Storm Water/Wet
- Weather
- Pipelines
- Flood Control
- Water Supply

WASTE

- Solid waste
- Recycling
- Hazardous Waste
- Collection & Transfer

TRANSPORT

- Airports
- Roads
- Highways
- Bikes
- Pedestrians
- Railways
- Public Transit
- Ports
- Waterways

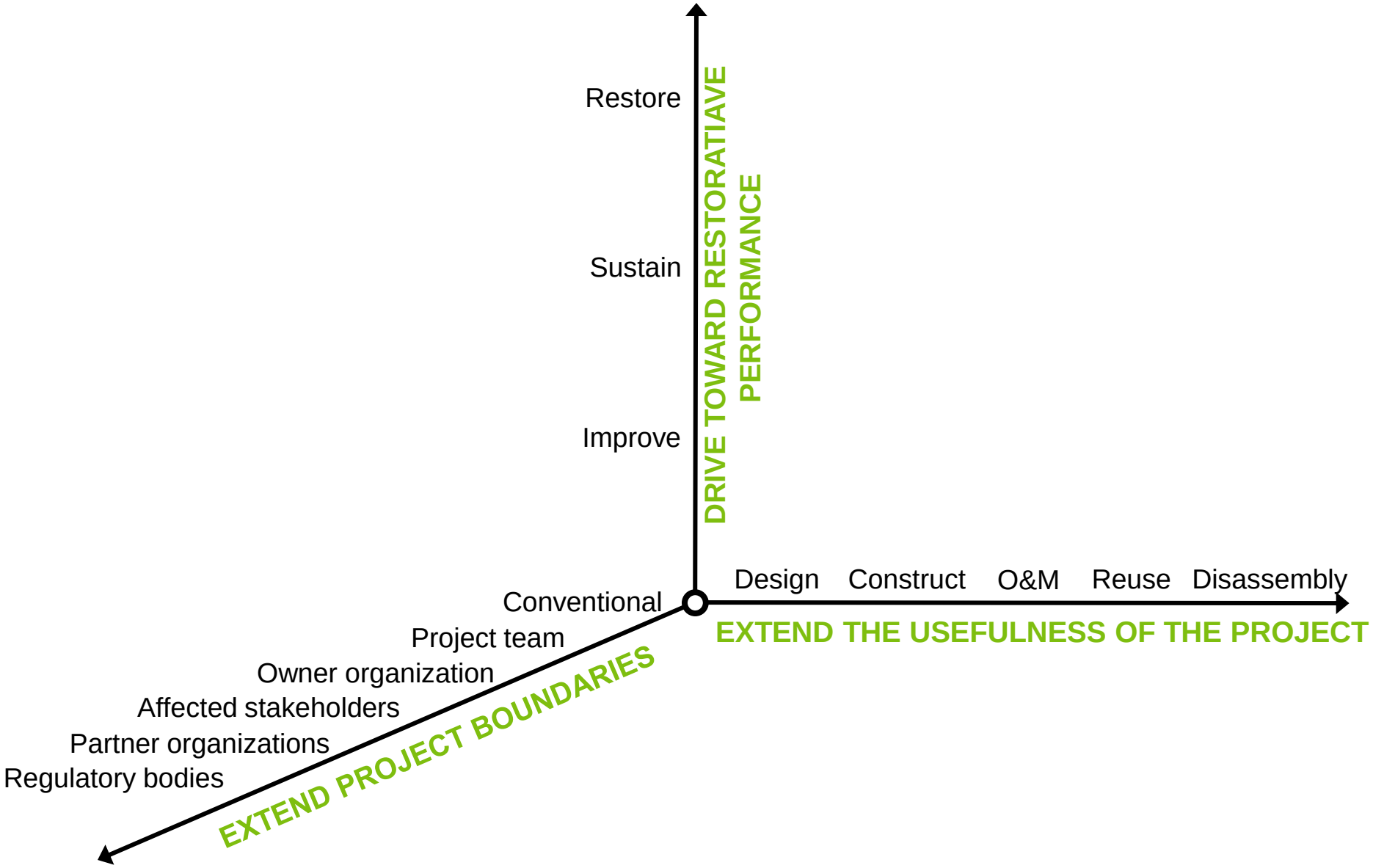
LANDSCAPE

- Public Realm
- Parks
- Ecosystem Services

INFORMATION

- Telecommunications
- Internet
- Phones
- Satellites
- Data Centers
- Sensors

HOW WILL ENVISION™ IMPROVE SUSTAINABILITY?



Why use Envision?

- Robust evaluation ensuring environmentally responsible projects. (avoid greenwashing)
- Metrics-based. Measures outcomes, not intentions
- Helps owners recognize and implement long-term, triple-bottom-line approaches
- Third-party verification

60 Credits in 5 Categories

 QUALITY OF LIFE	Purpose, Community, Wellbeing
 LEADERSHIP	Collaboration, Management, Planning
 RESOURCE ALLOCATION	Materials, Energy, Water
 NATURAL WORLD	Siting, Land & Water, Biodiversity
 CLIMATE AND RISK	Emission, Resilience

ISI ENVISION 2.0 CREDITS

				Improved	Enhanced	Superior	Conserving	Restorative
QUALITY OF LIFE	PURPOSE	QL1.1	Improve Community Quality of Life	2	5	10	20	25
		QL1.2	Stimulate sustainable growth and development	1	2	5	13	16
		QL1.3	Develop local skills and capabilities	1	2	5	12	15
	WELLBEING	QL2.1	Enhance public health and safety	2			16	
		QL2.2	Minimize noise and vibration	1			8	11
		QL2.3	Minimize light pollution	1	2	4	8	11
		QL2.4	Improve community mobility and access	1	4	7	14	
		QL2.5	Encourage alternative modes of transportation	1	3	6	12	15
		QL2.6	Improve site accessibility, safety and wayfinding		3	6	12	15
	COMMUNITY	QL3.1	Preserve historic and cultural resources	1		7	13	16
		QL3.2	Preserve views and local character	1	3	6	11	14
		QL3.3	Enhance public space	1	3	6	11	13
		QL0.0	Innovate or exceed credit requirements *(earn 1 through 8 pts)*					
LEADERSHIP	COLLABORATION	LD1.1	Provide effective leadership and commitment	2	4	9	17	
		LD1.2	Establish a sustainability management system	1	4	7	14	
		LD1.3	Foster collaboration and teamwork	1	4	8	15	
		LD1.4	Provide for stakeholder involvement	1	5	9	14	
	MANAGEMENT	LD2.1	Pursue by-product synergy opportunities	1	3	6	12	15
		LD2.2	Improve infrastructure integration	1	3	7	13	16
	PLANNING	LD3.1	Plan for long-term monitoring and maintenance	1	3		10	
		LD3.2	Address conflicting regulations and policies	1	2	4	8	
		LD3.3	Extend useful life	1	3	6	12	
		LD0.0	Innovate or exceed credit requirements *(earn 1 through 6 pts)*					

RESOURCE ALLOCATION	MATERIALS	RA.1.1	Reduce net embodied energy	2	6	12	18	
		RA1.2	Support sustainable procurement practices	2	3	6	9	
		RA1.3	Use recycled materials	2	5	11	14	
		RA1.4	Use regional materials	3	6	9	10	
		RA1.5	Divert waste from landfills	3	6	8	11	
		RA1.6	Reduce excavated materials taken off site	2	4	5	6	
		RA1.7	Provide for deconstruction and recycling	1	4	8	12	
	ENERGY	RA2.1	Reduce energy consumption	3	7	12	18	
		RA2.2	Use renewable energy	4	6	13	16	20
		RA2.3	Commission and monitor energy systems		3		11	
	WATER	RA3.1	Protect fresh water availability	2	4	9	17	21
		RA3.2	Reduce potable water consumption	4	9	13	17	21
		RA3.3	Monitor water systems	1	3	6	11	
		RA0.0	Innovate or exceed credit requirements *(earn 1 through 9 pts)*					
NATURAL WORLD	SITING	NW1.1	Preserve prime habitat			9	14	18
		NW1.2	Protect wetlands and surface water	1	4	9	14	18
		NW1.3	Preserve prime farmland			6	12	15
		NW1.4	Avoid adverse geology	1	2	3	5	
		NW1.5	Preserve floodplain functions	2	5	8	14	
		NW1.6	Avoid unsuitable development on steep slopes	1		4	6	
		NW1.7	Preserve greenfields	3	6	10	15	23
	LAND & WATER	NW2.1	Manage stormwater		4	9	17	21
		NW2.2	Reduce pesticide and fertilizer impacts	1	2	5	9	
		NW2.3	Prevent surface and groundwater contamination	1	4	9	14	18
	BIODIVERSITY	NW3.1	Preserve species biodiversity	2			13	16
		NW3.2	Control invasive species			5	9	11
		NW3.3	Restore disturbed soils				8	10
		NW3.4	Maintain wetland and surface water functions	3	6	9	15	19
		NW0.0	Innovate or exceed credit requirements *(earn 1 through 8 pts)*					
CLIMATE	EMISSIONS	CR1.1	Reduce greenhouse gas emissions	4	7	13	18	25
		CR1.2	Reduce air pollutant emissions	2	6		12	15
	RESILIENCE	CR2.1	Assess climate threat				15	
		CR2.2	Avoid traps and vulnerabilities	2	6	12	16	20
		CR2.3	Prepare for long-term adaptability				16	20
		CR2.4	Prepare for short-terms hazards	3		10	17	21
		CR2.5	Manage heat island effects	1	2	4	6	
		CR0.0	Innovate or exceed credit requirements *(earn 1 through 5 pts)*					

FIVE LEVELS OF ACHIEVEMENT

IMPROVED	Performance that is at or above conventional
ENHANCED	Indications that superior performance is within reach.
SUPERIOR	Sustainable performance that is noteworthy.
CONSERVING	Performance that has achieved essentially zero impact.
RESTORATIVE	Performance that restores natural or social systems.

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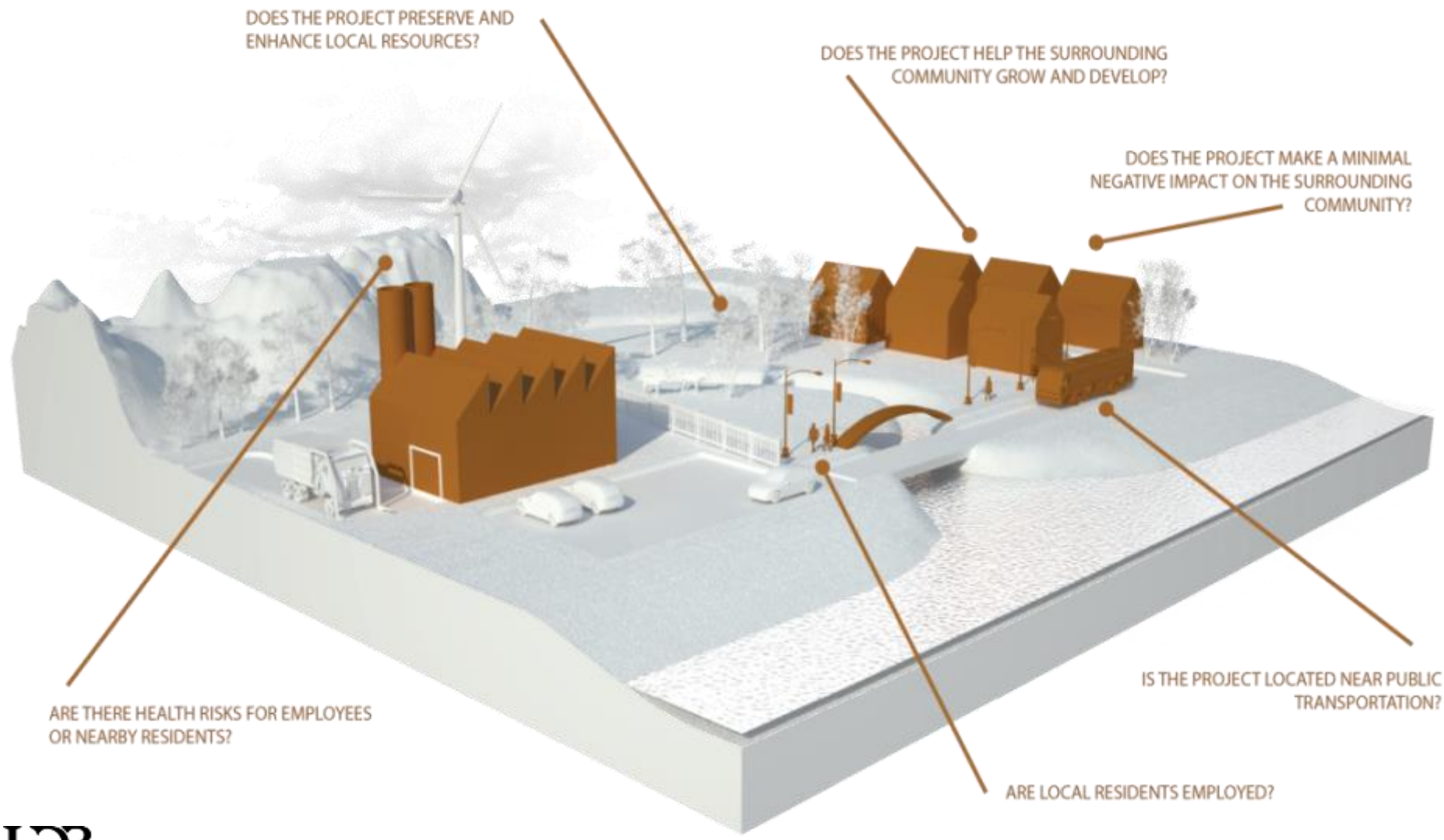
QUALITY OF LIFE



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QUALITY OF LIFE

1 PURPOSE

QL1.1 Improve Community Quality of Life

QL1.2 Stimulate Sustainable Growth and Development

QL1.3 Develop Local Skills and Capabilities

2 WELLBEING

QL2.1 Enhance Public Health and Safety

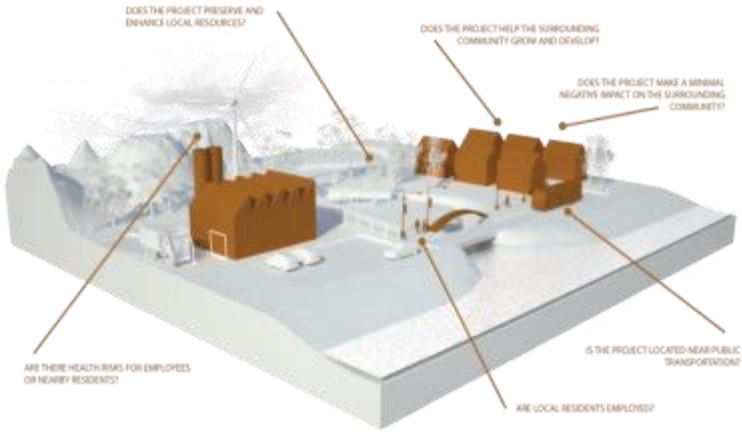
QL2.2 Minimize Noise and Vibration

QL2.3 Minimize Light Pollution

QL2.4 Improve Community Mobility and Access

QL2.5 Encourage Alternative Modes of Transportation

QL2.6 Improve Accessibility, Safety & Wayfinding



3 COMMUNITY

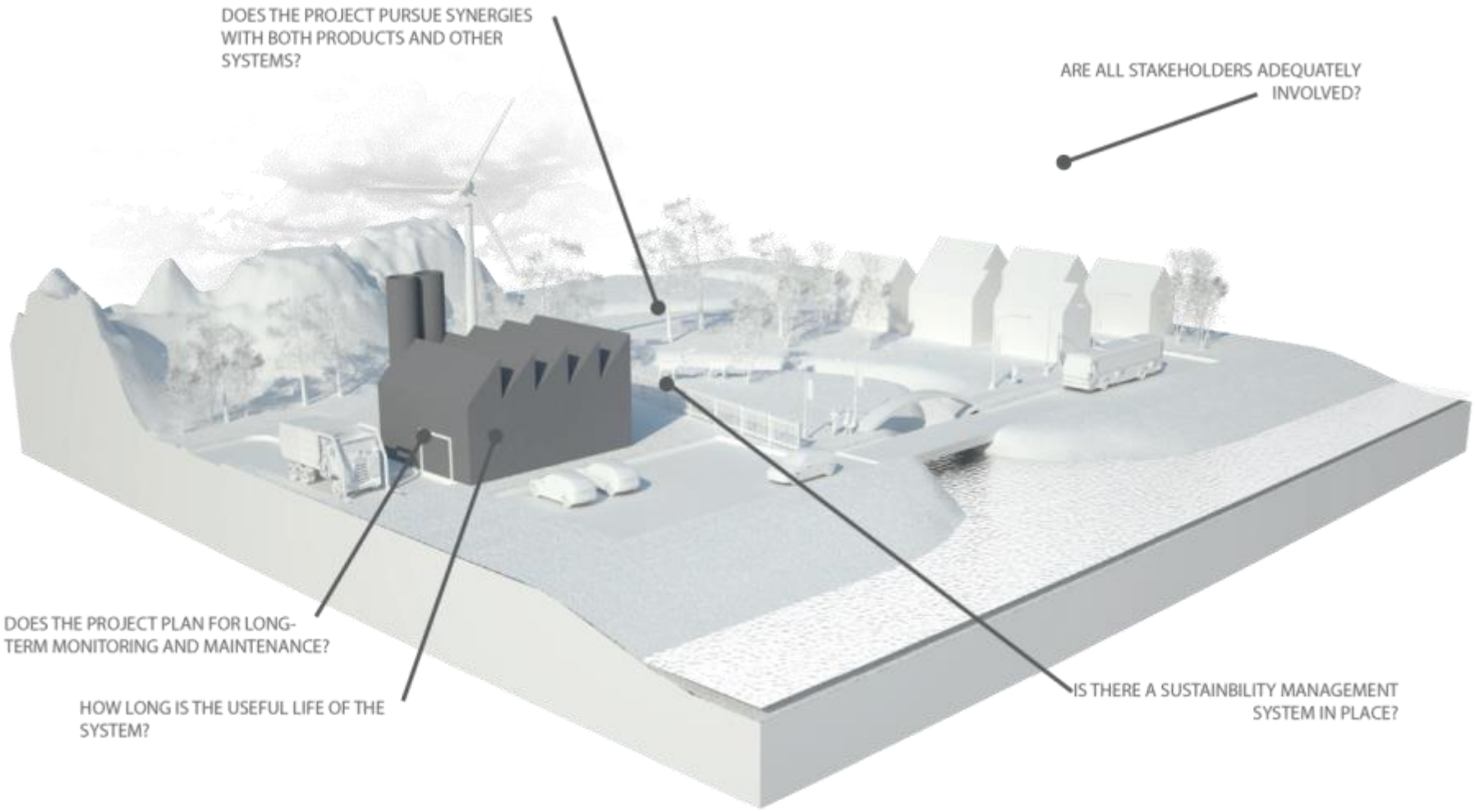
QL3.1 Preserve Historic and Cultural Resources

QL3.2 Preserve Views and Local Character

QL3.3 Enhance Public Space

QL0.0 Innovate or Exceed Credit Requirements

LEADERSHIP


DOES THE PROJECT PURSUE SYNERGIES WITH BOTH PRODUCTS AND OTHER SYSTEMS?
ARE ALL STAKEHOLDERS ADEQUATELY INVOLVED?
DOES THE PROJECT PLAN FOR LONG-TERM MONITORING AND MAINTENANCE?
HOW LONG IS THE USEFUL LIFE OF THE SYSTEM?
IS THERE A SUSTAINBILITY MANAGEMENT SYSTEM IN PLACE?

LEADERSHIP

1 COLLABORATION

LD1.1 Provide Effective Leadership & Commitment

LD1.2 Establish a Sustainability Management System

LD1.3 Foster Collaboration and Teamwork

LD1.4 Provide for Stakeholder Involvement

2 MANAGEMENT

LD2.1 Pursue By-Product Synergy Opportunities

LD2.2 Improve Infrastructure Integration

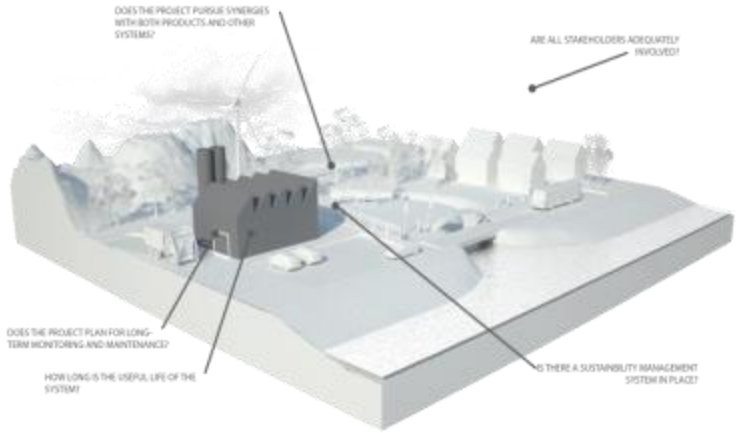
3 PLANNING

LD3.1 Plan Long-Term Maintenance and Monitoring

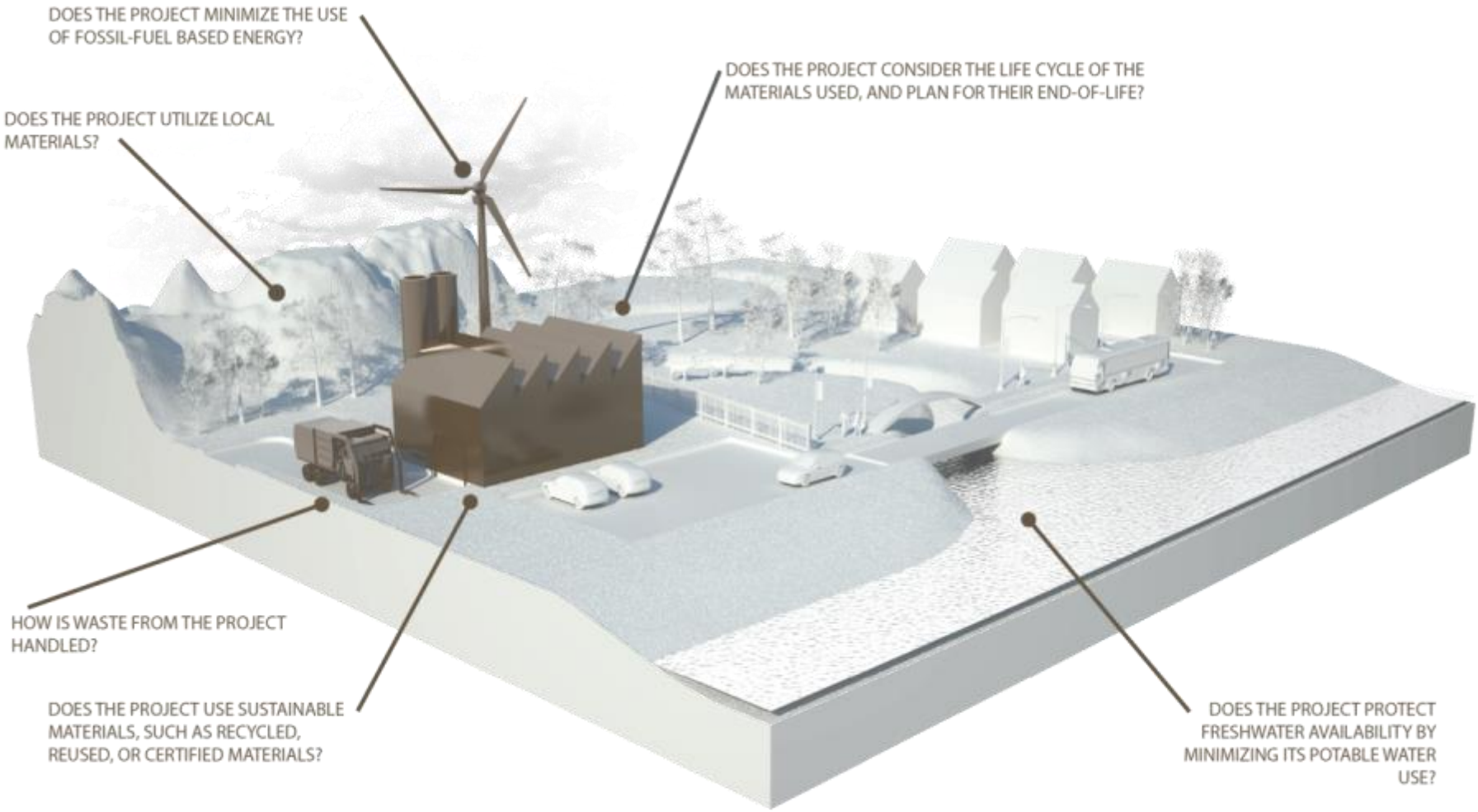
LD3.2 Address Conflicting Regulations and Policies

LD3.3 Extend Useful Life

LD0.0 Innovate or Exceed Credit Requirements



RESOURCE ALLOCATION



RESOURCE ALLOCATION

1 MATERIALS

RA1.1 Reduce Net Embodied Energy

RA1.2 Support Sustainable Procurement Practices

RA1.3 Use Recycled Materials

RA1.4 Use Regional Materials

RA1.5 Divert Waste from Landfills

RA1.6 Reduce Excavated Materials Taken Off Site

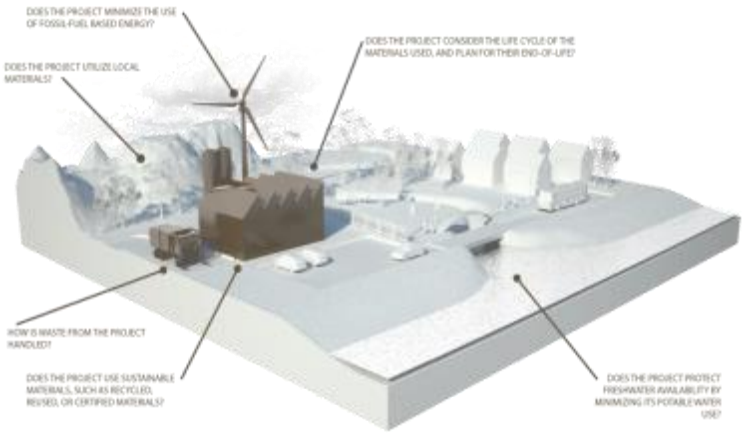
RA1.7 Provide for Deconstruction and Recycling

2 ENERGY

RA2.1 Reduce Energy Consumption

RA2.2 Use Renewable Energy

RA2.3 Commission and Monitor Energy Systems



3 WATER

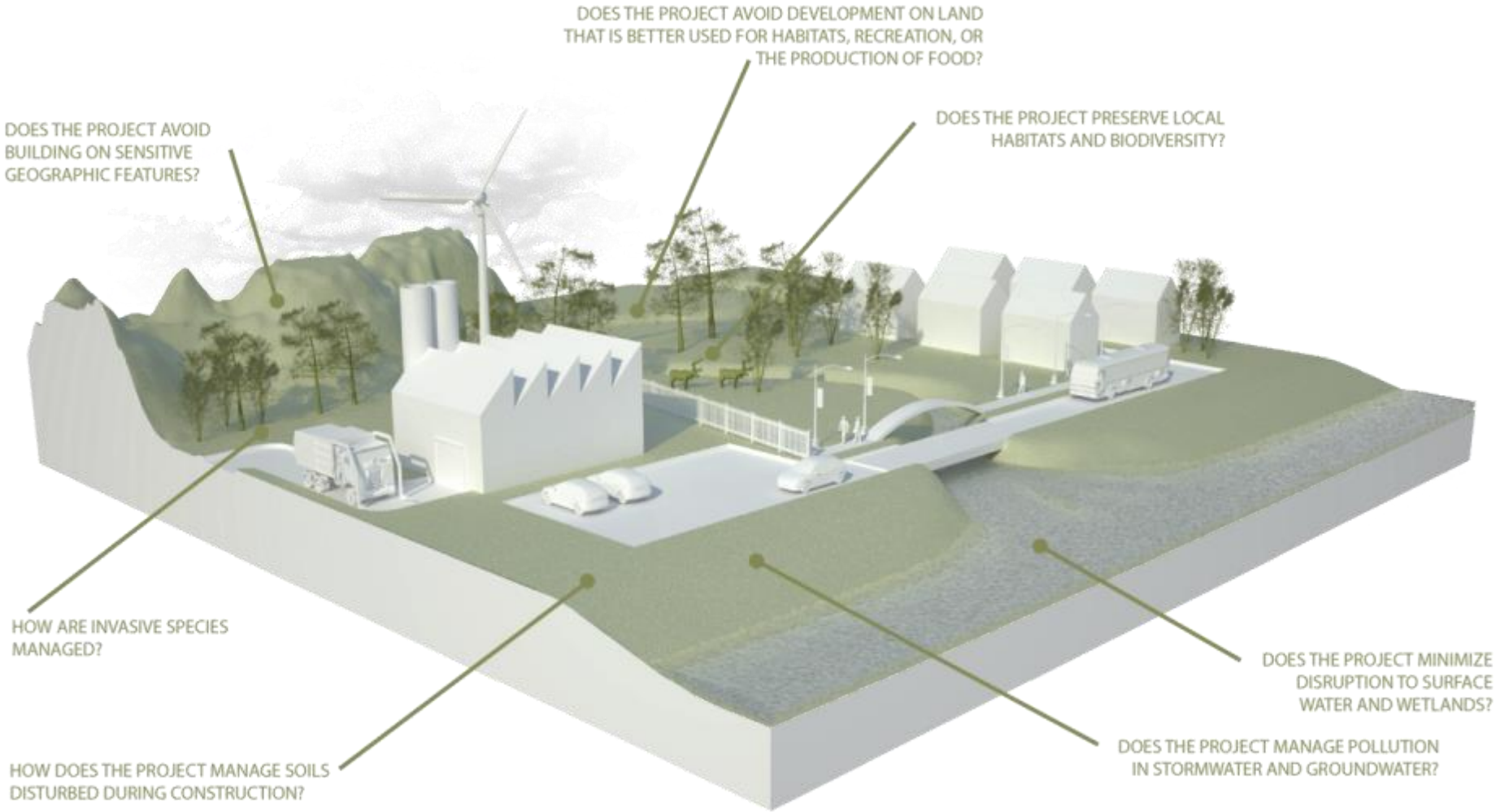
RA3.1 Protect Fresh Water Availability

RA3.2 Reduce Potable Water Consumption

RA3.3 Monitor Water Systems

RA0.0 Innovate or Exceed Credit Requirements

NATURAL WORLD



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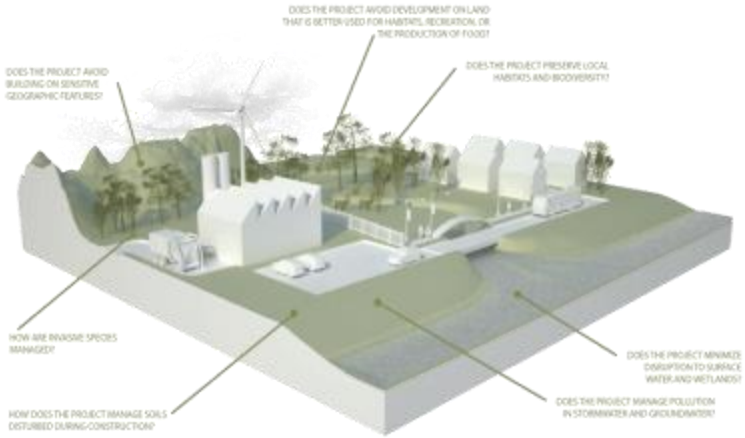
NATURAL WORLD



1 SITING

NW1.1 Preserve Prime Habitat

NW1.2 Preserve Wetlands and Surface Water

NW1.3 Preserve Prime Farmland

NW1.4 Avoid Adverse Geology

NW1.5 Preserve Floodplain Functions

NW1.6 Avoid Unsuitable Development on Steep Slopes

NW1.7 Preserve Greenfields

2 LAND+WATER

NW2.1 Manage Stormwater

NW2.2 Reduce Pesticides and Fertilizer Impacts

NW2.3 Prevent Surface and Groundwater Contamination

3 BIODIVERSITY

NW3.1 Preserve Species Biodiversity

NW3.2 Control Invasive Species

NW3.3 Restore Disturbed Soils

NW3.4 Maintain Wetland and Surface Water Functions

NW0.0 Innovate or Exceed Credit Requirements

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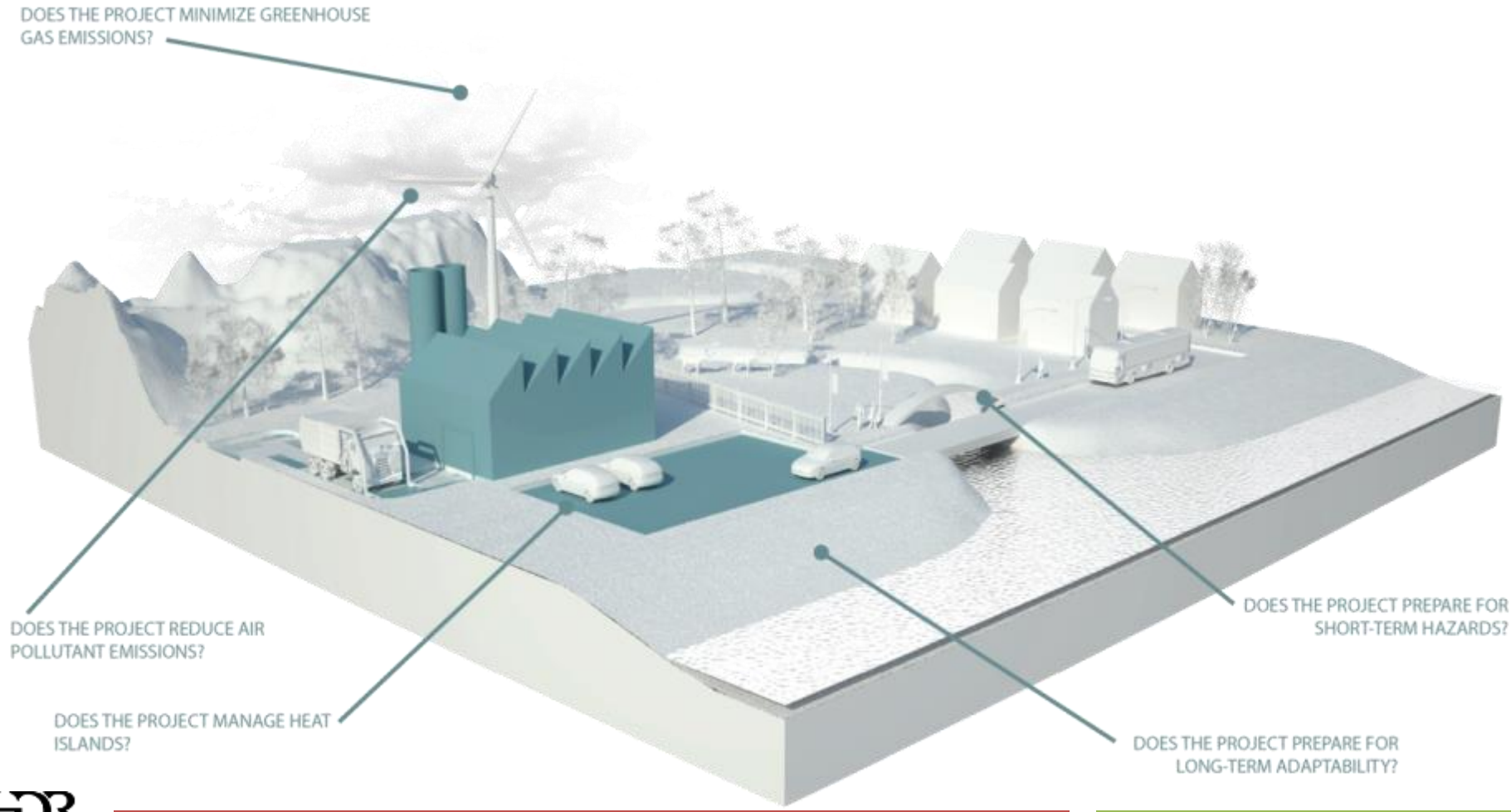
CLIMATE AND RISK



CLIMATE AND RISK

1 EMISSIONS

CR1.1 Reduce Greenhouse Gas Emissions

CR1.2 Reduce Air Pollutant Emissions

2 RESILIENCE

CR2.1 Assess Climate Threat

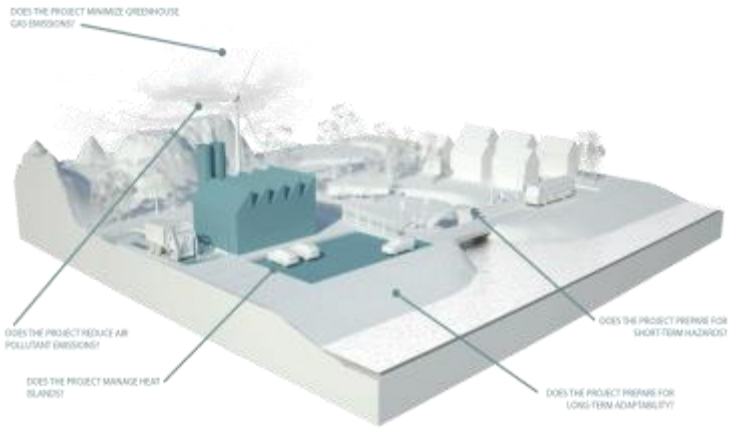
CR2.2 Avoid Traps and Vulnerabilities

CR2.3 Prepare For Long-Term Adaptability

CR2.4 Prepare for Short-Term Hazards

CR2.5 Manage Heat Island Effects

CR0.0 Innovate or Exceed Credit Requirements



Sample Credit

RA3.1 PROTECT FRESH WATER AVAILABILITY

INTENT:

Reduce the negative net impact on fresh water availability, quantity and quality.

LEVELS OF ACHIEVEMENT

IMPROVED	ENHANCED	SUPERIOR	CONSERVING	RESTORATIVE
(2) No immediate negatives. The design team determines how much fresh water will be used by the project both during construction and operations. Look for opportunities for reuse, and its effects on local surface water and groundwater including groundwater flows and quality. Consider peaks in short-term usage. Some estimates regarding long term impacts, but mostly extrapolations of current estimated usage. (A, B)	**(4) Good water management.** Design the project to access and control water usage over average maximum conditions, with plans to offset peak withdrawals during lower water need periods. Institute water reuse. More comprehensive assessment of long term needs. (A, B, C)	**(9) Wise water management.** Design the project to solely access water that can be replenished in quantity and quality. Control water usage over average maximum conditions, with plans to offset peak withdrawals during lower water need periods. Determine impacts of fresh water withdraw on receiving waters current and historic aquatic species. (A, B, C)	**(17) Total water management.** Design delivery and operations maintained such that there is no net impact on water supply volumes, including managing runoff to recharge local groundwater and surface water supplies in a manner that offsets withdrawals. Freshwater supplies are replenished at source. Discharges to receiving waters meet quality and quantity requirements of historic high value aquatic species. Methods may include closed loop recycling of water within the project. (A, B, C)	**(21) Positive impact.** Replenishes the quantity and quality of fresh water surface and groundwater supplies to an agreed upon undeveloped, native ecosystem condition. Discharges to surface waters of fresh water after use, meets historic pre-development seasonal cycles of quality and quantity, including temperature. (A, B, C, D)

Sample Credit

17 POINTS

RESOURCE ALLOCATION

METRIC:

The extent to which the project uses fresh water resources without replenishing those resources at its source.

EVALUATION CRITERIA AND DOCUMENTATION

A. To what extent have the owner and project team conducted a water availability assessment?

1. *Design documents indicating the location, type, quantity, rate of recharge and quality of water resources available to the project.*

B. Have the project team assessed project water requirements?

1. *Estimations of average peak demands and long term needs.*
2. *Report on the long-term availability and replenishment or recharge of fresh water supply.*
3. *Inventory of opportunities for water reuse or groundwater recharge on site.*
4. *Calculations of the volume of fresh water discharge after use.*
5. *Location of discharge and impact of discharge on receiving water quality and quantity, including temperature and salinity.*

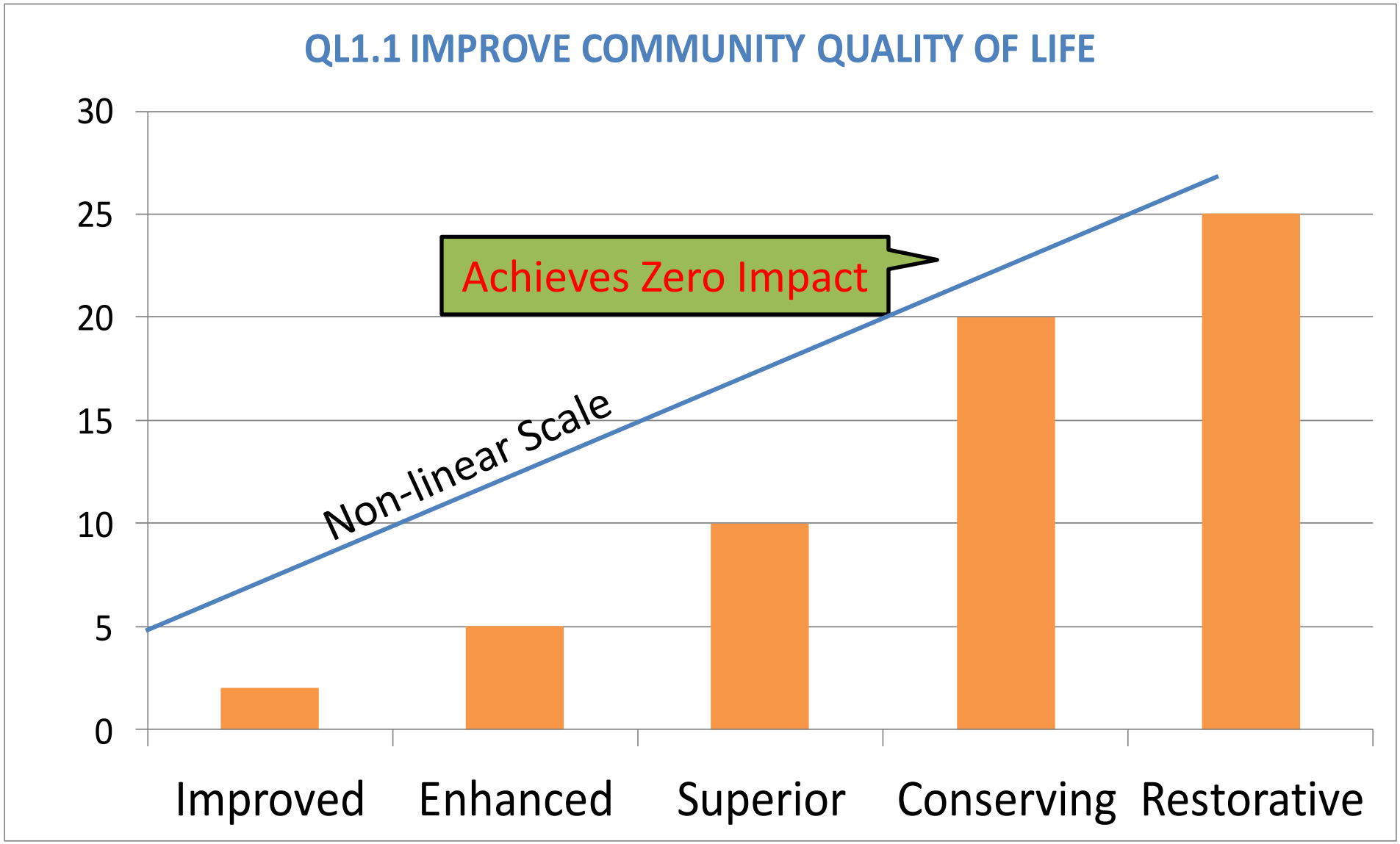
C. To what extent has the project team incorporated design features to minimize the long term negative net impact on ground and surface water source quality and quantity or to achieve a net positive impact on water sources?

1. *Design documents of all features intended to reduce negative water impacts.*
2. *Rationale as to how the integrated systems of the project will work together to mitigate overall negative impacts or achieve net positive recharge.*
3. *Inventory of any water impacts which the project is not able to mitigate.*

D. Does the project achieve a net positive water impact replenishing the quantity and quality of fresh water surface and groundwater supplies?

1. *Calculation showing the project has a long-term net positive impact and does not significantly alter natural fluctuation in flow in receiving waterway ecosystems.*

Levels of Achievement



Certification Award Levels

Recognition Level	Total Applicable Points (%)
Bronze Award	
Silver Award	
Gold Award	
Platinum Award	

Fee Schedule

Registration Fee: $1000

Verification Fee

Project Size ($)	Non-Member Price	ISI Member Price
Up to 2M	$3,000	$2,400
2-5M	$8,500	$7,000
5-25M	$17,000	$14,000
25-100M	$25,000	$21,000
100-250M	$33,000	$28,000
Over 250M	Contact ISI for large or multi-phase projects	

Appeals Fee: $500 per credit

HDR

ENVISION
Project Examples

ALASKA FISH HATCHERY AWARDED THE FIRST ENVISION PROJECT CERTIFICATION IN JULY 2013

- Alaska's new **William Jack Hernandez Sport Fish Hatchery** is a one-of-a-kind facility for the production of salmon and trout.
- The project marks the largest ever application of intensive water recirculation technology by a public agency to dramatically reduce water and energy consumption.
- The facility accommodates 100,000 visitors per year.

PROJECT FEATURES

SUSTAINABILITY

Sustainability guided the vision and development of every aspect of the hatchery. All facets of building and site design incorporated sustainability principles that will last far into the future. Sustainability considerations included:

- **Improving community quality of life**
  - Economic and Social Benefits
    - Recreation
    - Jobs
    - Tax revenue
    - Income
    - Enhancing the environment
  - Improved visitor safety and experience
    - Redesigned traffic flow and parking with crosswalks
    - Pathways around the building
    - ADA accessible viewing platforms and trails
  - Public education integral in building design
    - Visitors' center with displays
    - Trails with interpretive kiosks
    - Outdoor viewing area where salmon rest below a dam
- **Preserving greenfields**
  - Building on a reclaimed brownfield site benefits the environment and public by leaving the area cleaner than before development
- **Using recycled materials**
  - Used recycled content building materials
  - Reused existing staff housing, process water treatment, fish ladders and raceways
- **Reducing energy consumption significantly over traditional hatcheries**
  - Recirculation technology greatly reduces heating and pumping costs
  - Locating all hatchery operations within a single building provides tremendous opportunities for energy conservation
  - Performance monitoring through a custom application maximizes control of energy and minimizes water use
- **Protecting freshwater availability**
  - Storm and process water treatment prevents surface and ground water contamination, keeping Ship Creek clean
  - Recirculation technology saves water and energy
  - Anchorage's drinking water supply protected through:
    - Updating of the regional groundwater model to document no negative impacts from hatchery use
    - Minimizing groundwater needs through water reuse
    - Properly abandoning old, unneeded wells

ENVISION DOCUMENTATION

- 44% of total available points claimed by the team
- Earned **Envision** **GOLD** Award

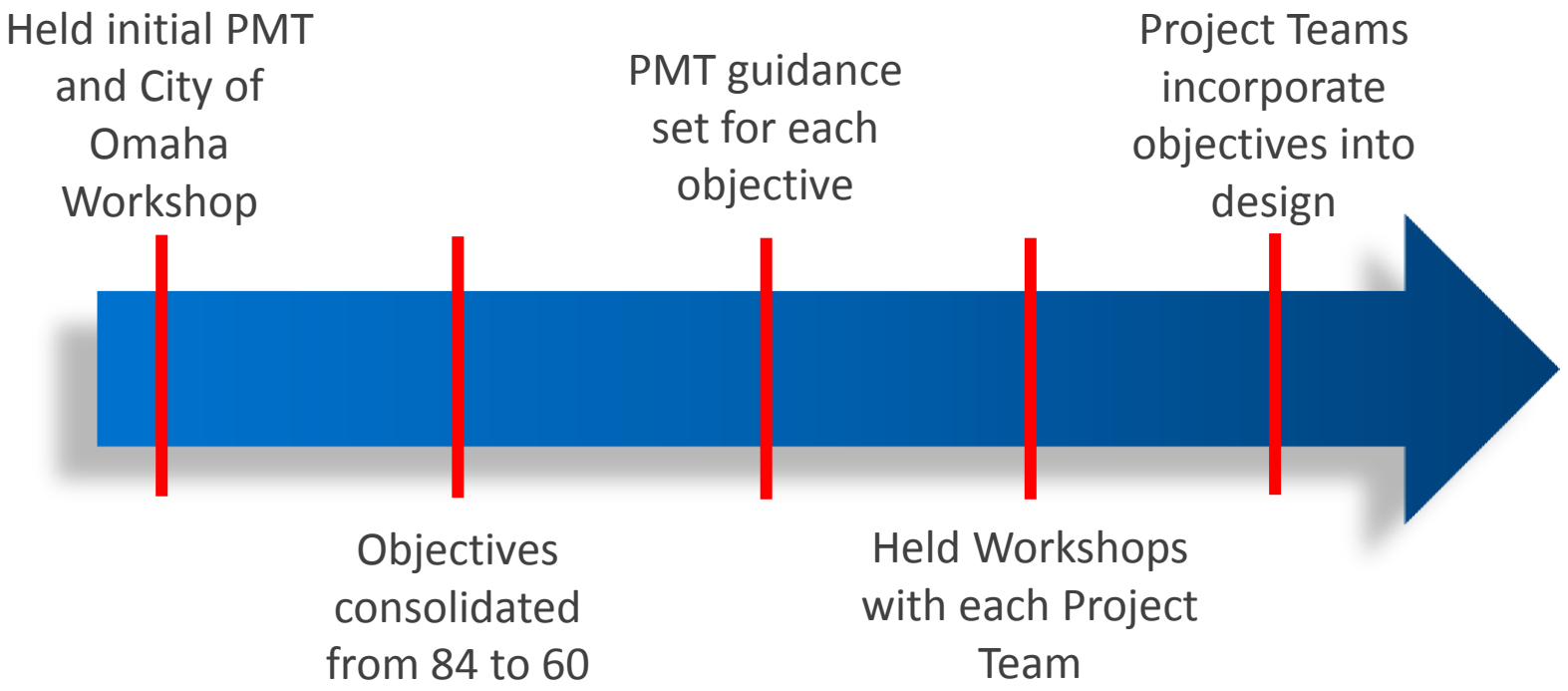
William Jack Hernandez Sport Fish Hatchery

Current Project Step: ASSESSMENT

Credit Category	Applicable Points	Points	Innovation Points	Total Points Pursued	Percentage of Available Points
QUALITY OF LIFE	155	77	0	77	50%
LEADERSHIP	97	62	6	68	64%
RESOURCE ALLOCATION	173	56	0	56	32%
NATURAL WORLD	182	103	0	103	57%
CLIMATE AND RISK	116	21	0	21	18%
Total Project Points	723	319	6	325	44%

Envision™ Scores

City of Omaha CSO Program



Employed the Envision Checklist

Example - Minne Lusa Stormwater Conveyance Sewer

ISI Credit	Potential Project Strategy	Potential ISI Level of Achievement
1.2.2 Avoid traps and vulnerabilities that create high, long-term risks	Use of tunneling construction method to eliminate conflicts with other existing utilities and virtually eliminate surface disruptions.	Superior
5.1.2 Design the project to fit with the local character	Consider tunnel drop shaft to be integrated with new bus facility.	Conserving
4.3.1 Select Grayfields for development	Tunnel drop shaft to be constructed at site of abandoned industrial facility (Gunderson Rail).	Restorative
8.1.3 Incorporate energy use reduction and conservation options in the design of the constructed works	Project reduces energy consumption by diverting flows from existing pumped detention cell to new detention cells operating by gravity.	Improving

Example - Paxton Blvd Stormwater Conveyance Sewer

ISI Credit	Potential Project Strategy	Potential ISI Level of Achievement
3.3.1 Provide for public and stakeholder involvement in project decision-making	Extensive coordination with Fontenelle Park stakeholders, including City of Omaha Parks Department. Stormwater infrastructure in park will be coordinated with planned enhancements to park that will include trails, park roads, prairie landscape, interpretive educational exhibits, signage and public open space.	Superior
5.1.2 Design the project to fit with the local character	Retain and/or re-construct historic streetscape elements of Paxton Boulevard, another of Omaha's original boulevards.	Conserving
7.4.2 Manage stormwater on site	Project design includes evaluation of green solutions throughout watershed as well as in Fontenelle Park.	Enhanced

Example - JCB Stormwater Conveyance Sewer

ISI Credit	Potential Project Strategy	Potential ISI Level of Achievement
2.2.1 Pursue opportunities for sustainability improvement throughout the full project life cycle	Evaluation of watershed hydrology with respect to maintaining water level in Adams Park for recreational benefit with goal of avoiding pumping of supplemental water source	Superior
4.1.2 Preserve and restore wetlands	Enhancement of Adams Park detention basin to include additional wetlands and wetlands forebay.	Restorative
7.4.2 Manage storm water on-site	Project design includes evaluation of green infrastructure solutions throughout watershed as well as in Adams Park.	Enhanced

WEBSITE

http://www.sustainableinfrastructure.org/

FOR MORE INFORMATION ABOUT ENVISION™

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